BOOK REVIEWS

The Elementary Nervous System. By G. H. PARKER. Philadelphia, J. B. Lippincott Co., 1919. 229 p.

This interesting volume is one of the series of monographs on Experimental Biology which are being prepared by a number of American biologists. Its purpose, according to the author, is to portray by means of experimental and quantitative methods the elementary nervous system as it exists in the simpler animals and in the simpler parts of the more complex forms.

In the introduction a brief comparison is made between the ancient and modern ideas of the nervous system wherein it is shown that the complex mechanism of higher animals, according to modern research, is composed of relatively simple elements, the neurones, arranged upon a comparatively uniform plan which from a physiological standpoint falls into three distinct categories. The first is a *receptor* system which is found in the sense organs that receive the external stimuli and produce the sensory impulses. The second is an *adjustor* system or the central nervous organ that receives the stimuli from the receptors and directs them to the appropriate muscles, glands, etc., for an orderly response. In the more highly organized animals the impressions may be made upon the adjustor system as memories and become a permanent part of the animal's nervous equipment. The third category consists of the *effectors* such as muscles, glands, etc., which enable an animal to react to changes in its environment. These three categories are not found in the nervous system of the lower forms but are shown to have developed from a simple, primitive condition consisting of nothing but an effector system.

The main body of the book is divided into three sections. The first one deals with experiments on the behavior of sponges where no nerve tissue is found. Movements are accomplished by means of cells comparable to a primitive form of smooth muscle fiber or others that represent a stage of differentiation between amoeboid motion and simple muscle contraction. No coordinating system is present anatomically or physiologically. All the evidence collected shows that sponges contain the beginnings of a neuromuscular mechanism with the most primitive constituent, muscle, around which the remainder of the system is supposed to have been evolved. Independent effectors, similar to those found in sponges which are not innervated but are activated by direct stimulation, are shown to occur in the higher animals. The examples cited are the iris of the eye, heart muscle, amnion of embryo chicks and acontia of sea anemones. Also sluggish forms of transmission exhibited by the ordinary tissues of the sponge are found in the more complex organisms as in their ciliated epithelium.

The second section of the book is concerned with receptor-effector systems that mark the second step in the evolution of the nervous system. In the sea anemone the neuromuscular structure is composed of a dense meshwork of neurofibrils extending from the outer body layer to the more important systems of muscles in the mesenteries. In these animals the effector systems are more numerous and complicated than in the sponges. They consist of mucous glands, ciliated

epithelia, nematocysts and muscles. Of these, however, the first three are without nervous influence and are, therefore, independent effectors. In the jellyfishes a marked increase in sensitivity is found over that manifested in sponges due to the acquirement of sense organs or receptors and the establishment of nerve connections that create a quicker and more efficient system by increasing the sensitiveness of the new member, the receptor, rather than on a considerable change in the original member, the effector. From the anatomical standpoint this primitive nervous system as seen in the Coelenterates is diffuse, in the form of a nerve net, but it shows some polarity by forming bands or trunks with some resemblance to nerves that permit receptive cells to control muscles or effectors situated some distance from them. Physiologically, the parts are relatively independent with no central control.

In the third section of the book the author discusses the anatomical and physiological relation of the elementary nervous system of the sponges and Coelenterates to the central nervous system of the more complex animals where a new element arises in the form of a central organ or adjustor in the region between the receptor and effector. It is this portion that, in the higher animals and man, has given rise to the central nervous system with all its complexity. In conclusion he says, "Thus the system that arose secondarily around an independent effector, muscle, has in the end gained such supremacy as to take to itself a number of independent effectors, any one of which might in the beginning have served as the nucleus around which the first nervous tissue could have taken origin."

The argument is based upon minute anatomical evidence and a great mass of data collected from numerous ingenious experiments, most of which are very simple in nature but at the same time furnish evidence that leads to definite conclusions. The subject is presented with unusual clearness and accuracy of detail and in such a simple and interesting manner that persons with no more than an elementary training in biology can read this monograph with profit. It is a contribution of utmost importance to the origin and evolution of the nervous system.

I. A. FIELD.

El Psicoanalisis. By HONORARIO F. DELGADO. Lima, 1919. 58 p. Also *La Psicologia de la Locura.* Madrid, 1919. 20 p.

Dr. Delgado's monograph on psychoanalysis is very inclusive and shows a thorough theoretic knowledge of the subject. His reading of both German and English literature has obviously been very extensive, and has not been limited to any one school, so that in his own synthetic presentation, although he follows Freud very closely, he does not neglect the contributions of such men as Adler, Jung, Maeder et als.

The first chapter of Dr. Delgado's *El Psicoanalisis* is devoted to an outline of the Freudian views of the rôle of the sex instinct in human life. Broadly speaking, it deals with the subjects of infantile sexuality, narcissism, Oedipus and Electra complexes, arrest of the libido, repression, the dream mechanism, symbolisation, etc. The application of these principles in the explanation of such perversions as homosexuality is adequately set forth, and the necessity of a natural development of the libido for the formation of a normal personality is emphasized.

The second chapter of the monograph is a brief but clear presentation of the theory of the sexual etiology of the psychoneuroses and allied mental diseases. The anxiety neurosis, neurasthenia, hysteria, compulsive neuroses, paranoia, dementia praecox, and manic-depres-